

DP-300744

IN THE CLAIMS:

1. (Original) An exhaust gas catalyst system, comprising:
a substrate; and
a nitrogen oxide adsorber disposed on said substrate, the nitrogen oxides adsorber comprising:
a porous support; and
a material loaded on said porous support comprising:
a NO_x oxidation catalyst; and
an alkali material; and
an alkali metal barrier disposed between the substrate and the nitrogen oxide adsorber.
2. (Original) The exhaust gas catalyst system of Claim 1, wherein said porous support comprises alumina, gamma-alumina, delta-alumina, theta-alumina, zeolite, zirconia, ceria, magnesium oxide, titania, silica, or mixtures comprising at least one of the foregoing.
3. (Original) The exhaust gas catalyst system of Claim 1, wherein said NO_x oxidation catalyst is platinum, palladium, rhodium, or mixtures comprising at least one of the foregoing.
4. (Original) The exhaust gas catalyst system of Claim 1, wherein the alkali material is sodium, potassium, cesium, lithium, rubidium, or mixtures comprising at least one of the foregoing.
5. (Original) The exhaust gas catalyst system of Claim 1, wherein the alkali metal barrier is a material containing an early transition metal oxide.

DP-300744

6. (Currently Amended) The exhaust gas catalyst system of Claim 15, wherein the alkali metal barrier is a material selected from the group consisting of zirconia, titania, ferric oxide, cordierite, alpha-alumina, mullite, tin oxide, ceria, manganese oxide, silica, vanadium oxide, chromium oxide, hafnium oxide, molybdenum oxide, tungsten oxide, and mixtures comprising at least one of these materials.

7. (Original) The exhaust gas catalyst system of Claim 1, wherein the alkali metal barrier is present in an amount sufficient to substantially inhibit the migration of alkali material out of said nitrogen oxides adsorber.

8. (Currently Amended) The exhaust gas catalyst system of Claim 17, further comprising an additional alkali metal barrier mixed with said material, wherein the additional alkali metal barrier is loaded on said porous support and present in an amount of up to about 2 g/in³.

9. (Currently Amended) The exhaust gas catalyst system of Claim 8, wherein the additional alkali metal barrier is present in an amount up to about 0.35 g/in³.

10. (Currently Amended) The exhaust gas catalyst system of Claim 9, wherein the additional alkali metal barrier is present in an amount up to about 0.25 g/in³.

11. (Currently Amended) The exhaust gas catalyst system of Claim 10, wherein the additional alkali metal barrier is present in an amount of about 0.05 g/in³ to about 0.20 g/in³.

12. (Cancelled)

13. (Currently Amended) The exhaust gas catalyst system of Claim 112, wherein the alkali metal barrier said layer comprises an atomic film.

14. (Currently Amended) The exhaust gas catalyst system of Claim 112, wherein the alkali metal barrier comprises a film having said layer has a thickness of up to about 100 μ.

DP-300744

15. (Currently Amended) The exhaust gas catalyst system of Claim 1, further comprising additional alkali metal barrier mixed with said material.

16. (Original) The exhaust gas catalyst system of Claim 1, further comprising a three-way catalyst component, positioned downstream of the nitrogen oxides adsorber or part of the nitrogen oxides adsorber.

17 - 38 (cancelled)

39. (New) The exhaust gas catalyst system of Claim 1, wherein the substrate comprises cordierite.

40. (New) An exhaust gas catalyst system, comprising:
a cordierite substrate; and
a nitrogen oxide adsorber disposed on the cordierite substrate, the nitrogen oxide adsorber comprising:
a porous support, and
a material loaded on the porous support comprising:
a NO_x oxidation catalyst; and
an alkali material; and
an alkali metal barrier disposed between the cordierite substrate and the nitrogen oxide adsorber, wherein the alkali metal barrier comprises a metal oxide.

41. (New) The exhaust gas system of Claim 40, wherein the alkali metal barrier is a material selected from the group consisting of zirconia, titania, ferric oxide, cordierite, alpha-alumina, mullite, tin oxide, ceria, manganese oxide, silica, vanadium oxide, chromium oxide, hafnium oxide, molybdenum oxide, tungsten oxide, and mixtures comprising at least one of these materials.